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Gallagher et al.

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[45] **Date of Patent: Aug. 13, 1996**

[54] **MAILING MACHINE INCLUDING OVERRIDEABLE SHEET LENGTH DISCRIMINATING STRUCTURE**

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[22] Filed: **Dec. 17, 1992**

[51] **Int. Cl.**[6] **B41L 47/46**

[52] **U.S. Cl.** **101/91**; 400/582

[58] **Field of Search** 400/578, 582, 400/596, 624, 625, 629, 630, 708; 101/91; 271/256, 258, 259, 265

[56] **References Cited**

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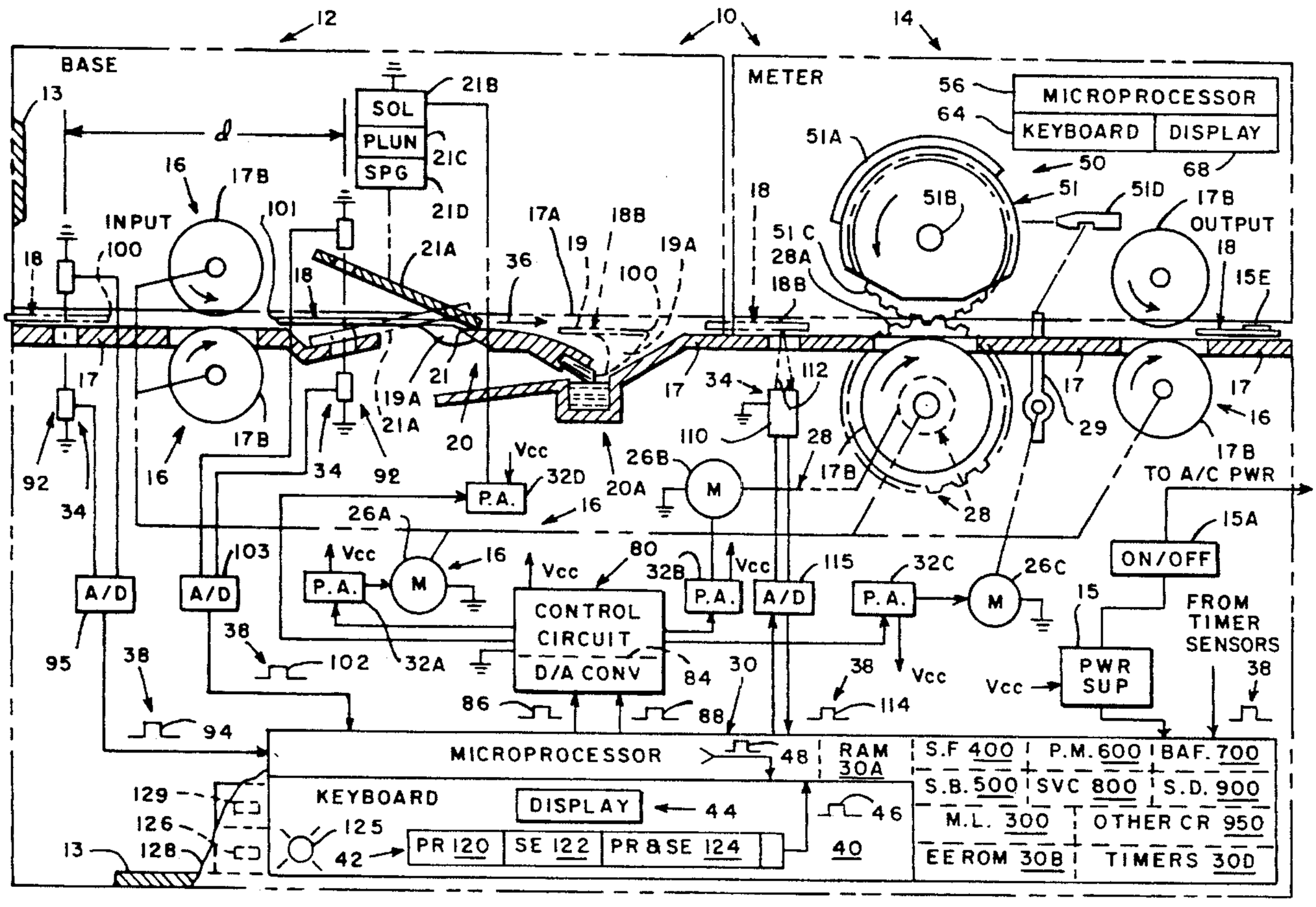
Primary Examiner—Christopher A. Bennett
Attorney, Agent, or Firm—Angelo N. Chaclas; Melvin J. Scolnick

[57] **ABSTRACT**

A mailing machine comprising, structure for feeding a sheet in a path of travel, structure for printing indicia on the sheet, structure for controlling the sheet feeding and printing structure, the controlling structure including a microprocessor, the controlling structure including structure for sensing the sheet in the path of travel, the sensing structure including a first sensor for sequentially sensing the leading and trailing edges of the sheet and providing corresponding sequential first signals to the microprocessor, the sensing structure including a second sensor downstream from the first sensor for sensing the leading edge of the sheet and providing a corresponding second sensing signal to the microprocessor, and the microprocessor programmed for causing the sheet feeding structure to feed the sheet, commencing a count of a first time interval when the trailing edge of the sheet is sensed by the first sensor, determining whether the first time interval count is less than a predetermined second time interval when the leading edge of the sheet is sensed by the second sensor, and terminating sheet feeding if the first time interval count is not less than the predetermined second time interval.

8 Claims, 4 Drawing Sheets



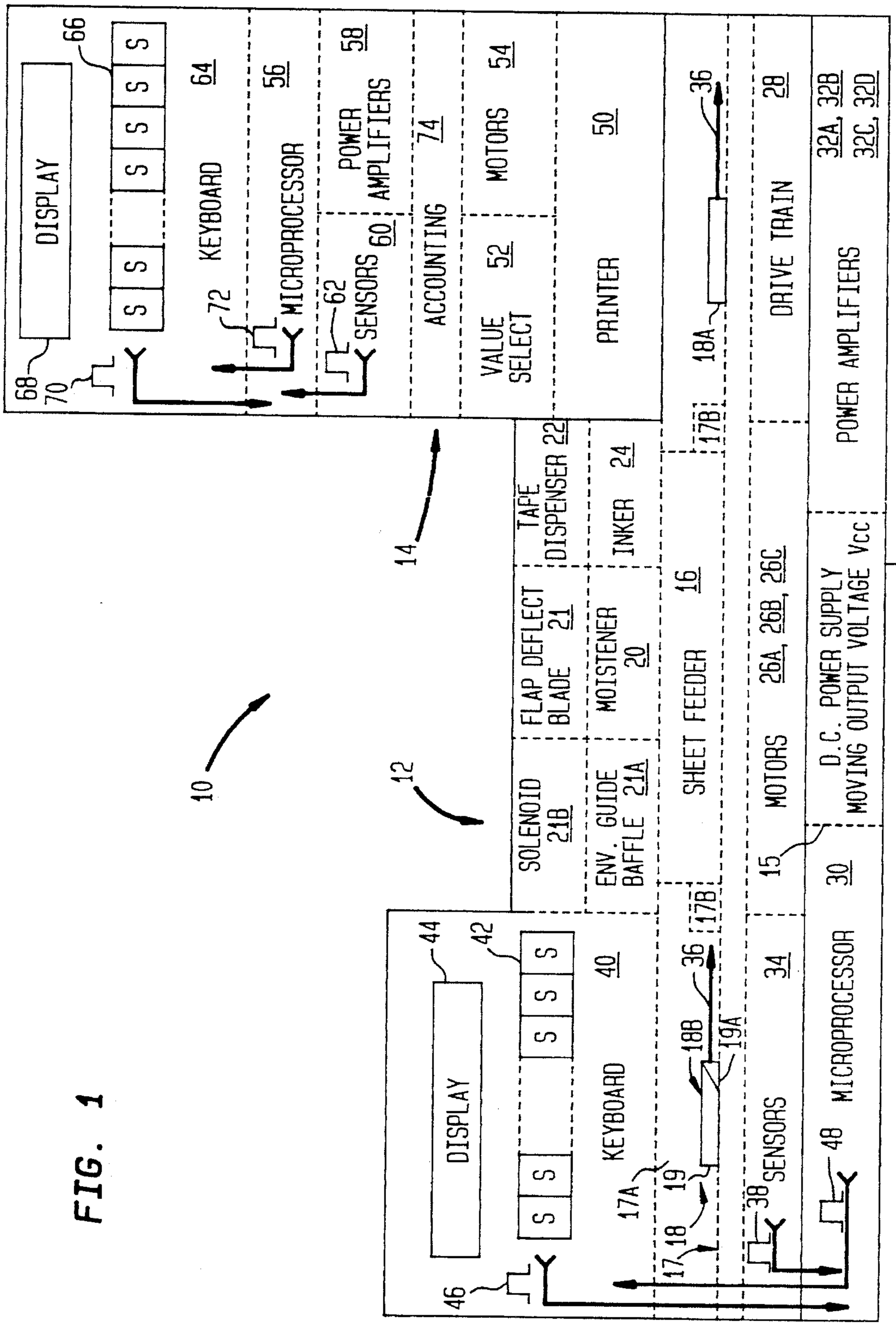

10
12
14
DISPLAY
66
S S S S S S
KEYBOARD 64
MICROPROCESSOR 56
POWER AMPLIFIERS 58
SENSORS 60
ACCOUNTING 74
VALUE SELECT 52
MOTORS 54
PRINTER 50
68
70
72
62
36
18A
17B
16
TAPE DISPENSER 22
INKER 24
SOLENOID 21B
FLAP DEFLECT BLADE 21
ENV. GUIDE BAFFLE 21A
MOISTENER 20
SHEET FEEDER
MOTORS 26A, 26B, 26C
DRIVE TRAIN 28
32A, 32B 32C, 32D
POWER AMPLIFIERS
D.C. POWER SUPPLY MOVING OUTPUT VOLTAGE Vcc
TO A.C SOURCE
44
42
40
18B
19A
34
15
30
MICROPROCESSOR
46
KEYBOARD
17A
17
18
19
38
SENSORS
48

FIG. 1

FIG. 2

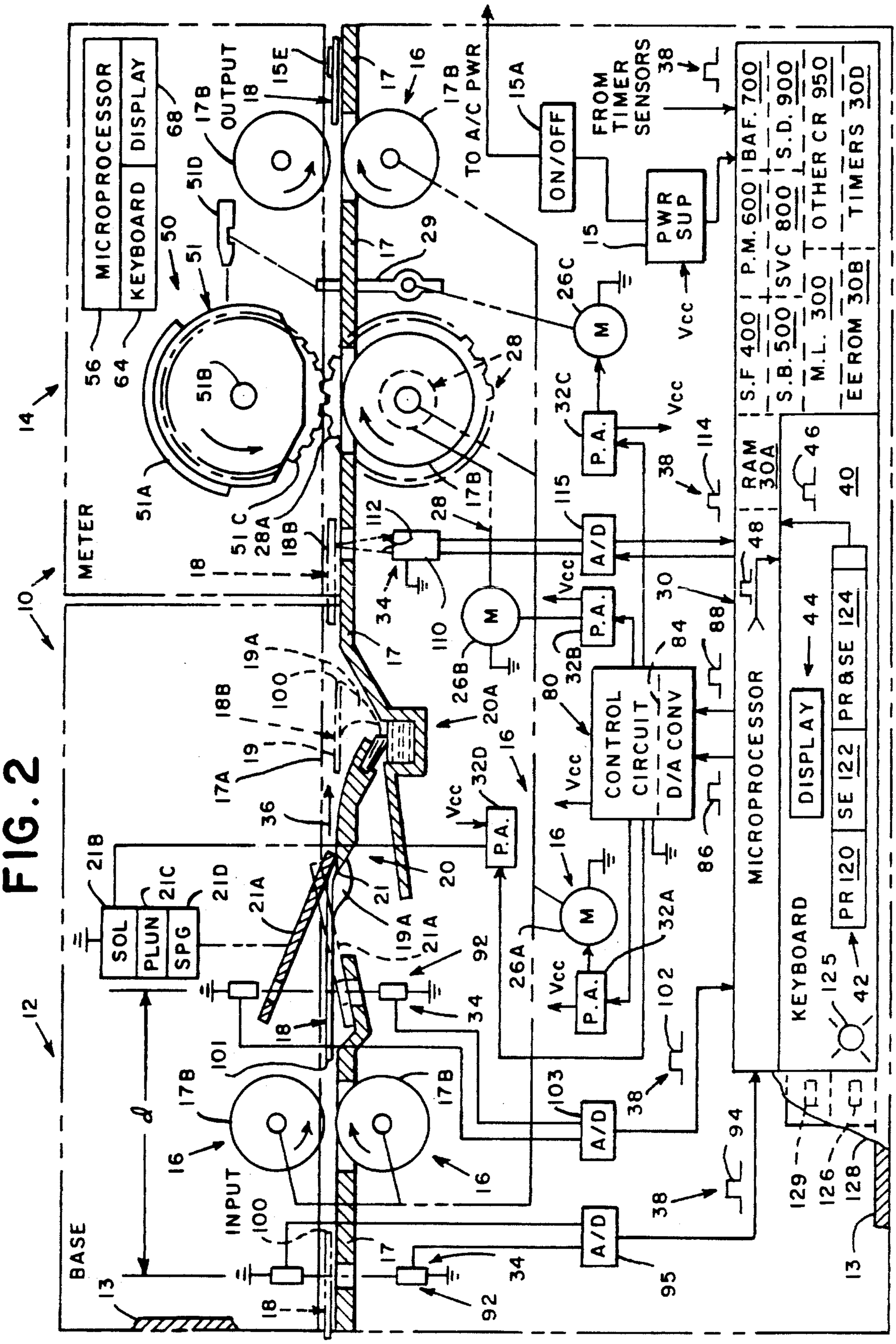
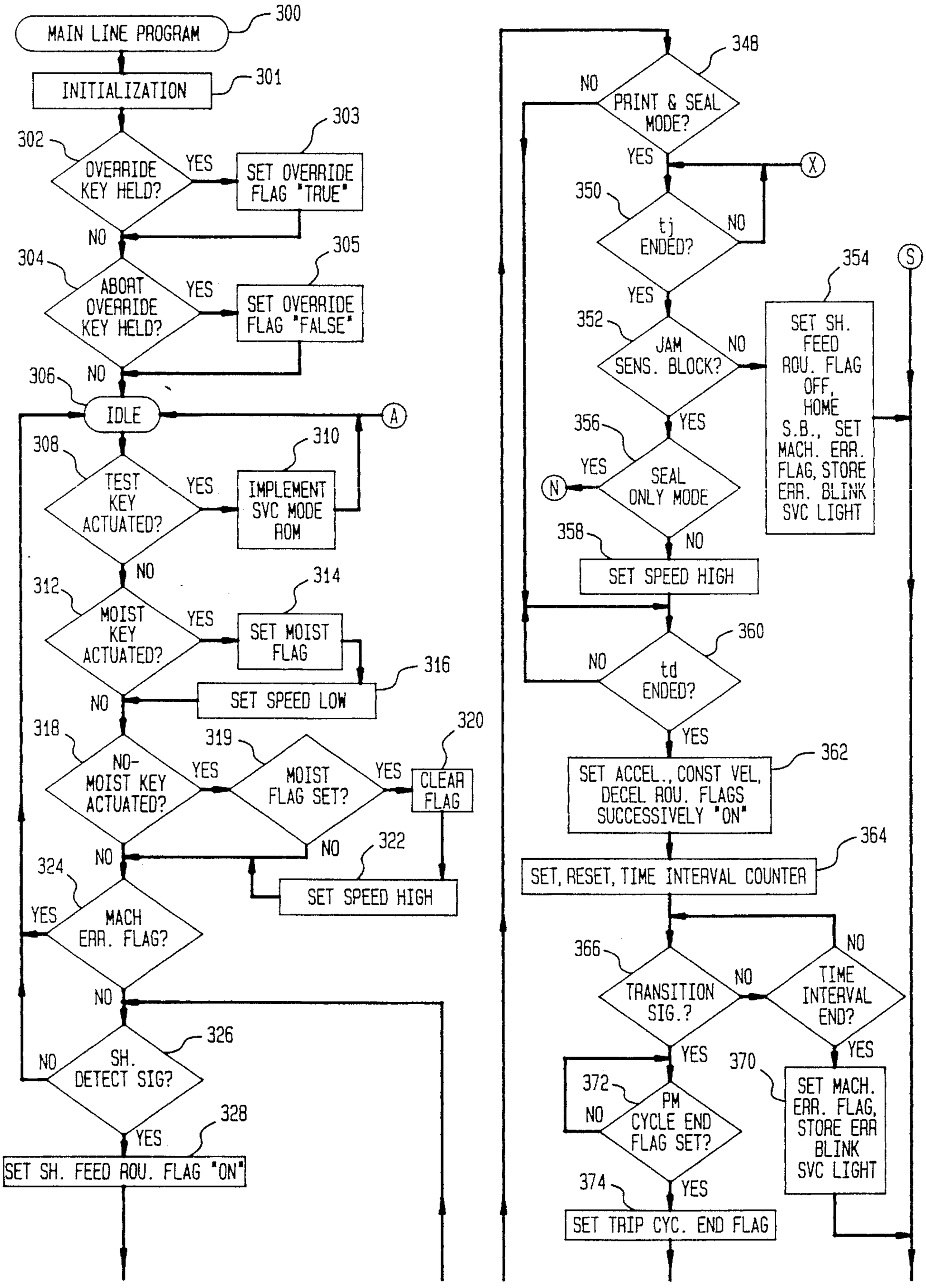

MICROPROCESSOR
KEYBOARD
DISPLAY
CONTROL CIRCUIT
D/A CONV
RAM 30A
EEROM 30B
TIMERS 30D
S.F 400
S.B. 500
M.L. 300
P.M. 600
BAF. 700
S.D. 900
SVC 800
OTHER CR 950
PR 120
SE 122
PR & SE 124
PWR SUP
ON/OFF
FROM TIMER SENSORS
TO A/C PWR
OUTPUT
INPUT
METER
BASE
SOL
PLUN
SPG
A/D
P.A.
M
Vcc

FIG. 3A


MAIN LINE PROGRAM
300
INITIALIZATION
301
302
OVERRIDE KEY HELD?
YES
303
SET OVERRIDE FLAG "TRUE"
NO
304
ABORT OVERRIDE KEY HELD?
YES
305
SET OVERRIDE FLAG "FALSE"
NO
306
IDLE
A
308
TEST KEY ACTUATED?
YES
310
IMPLEMENT SVC MODE ROM
NO
312
MOIST KEY ACTUATED?
YES
314
SET MOIST FLAG
316
SET SPEED LOW
NO
318
NO-MOIST KEY ACTUATED?
YES
319
MOIST FLAG SET?
YES
320
CLEAR FLAG
NO
NO
322
SET SPEED HIGH
324
MACH ERR. FLAG?
YES
NO
326
SH. DETECT SIG?
NO
YES
328
SET SH. FEED ROU. FLAG "ON"
348
PRINT & SEAL MODE?
NO
YES
X
350
tj ENDED?
NO
YES
352
JAM SENS. BLOCK?
NO
354
SET SH. FEED ROU. FLAG OFF, HOME S.B., SET MACH. ERR. FLAG, STORE ERR. BLINK SVC LIGHT
S
YES
356
SEAL ONLY MODE
YES
N
NO
358
SET SPEED HIGH
360
td ENDED?
NO
YES
362
SET ACCEL., CONST VEL, DECEL ROU. FLAGS SUCCESSIVELY "ON"
364
SET, RESET, TIME INTERVAL COUNTER
366
TRANSITION SIG.?
NO
TIME INTERVAL END?
NO
YES
YES
370
SET MACH. ERR. FLAG, STORE ERR BLINK SVC LIGHT
372
PM CYCLE END FLAG SET?
NO
YES
374
SET TRIP CYC. END FLAG

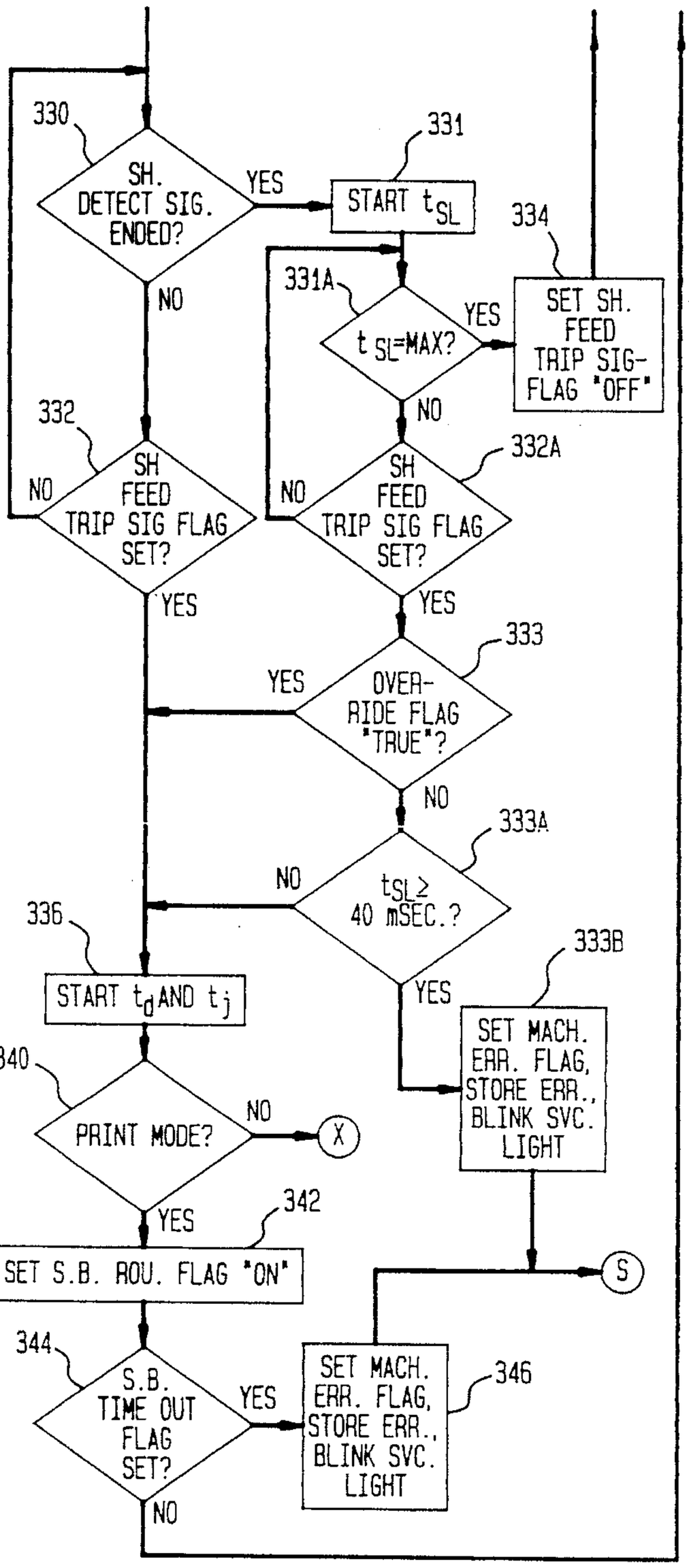


FIG. 3A

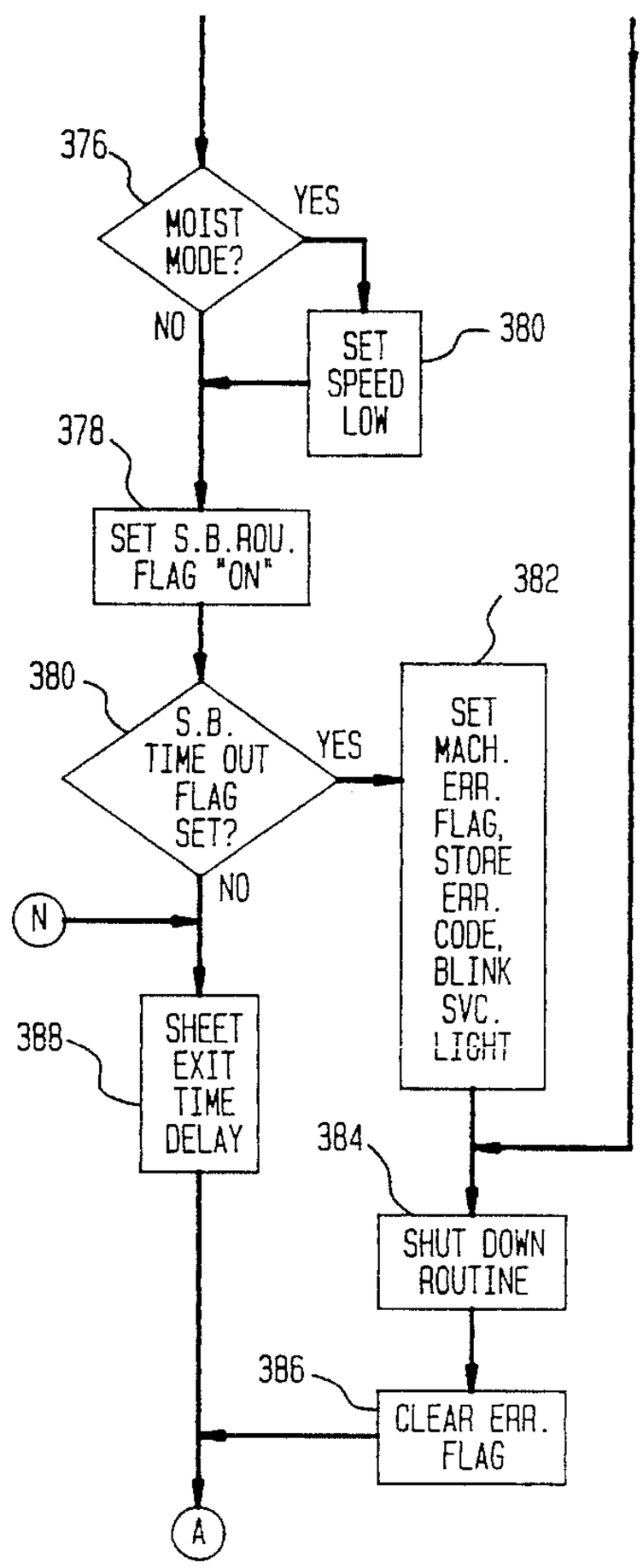


FIG. 3B

FIG. 3

FIG. 3A

FIG. 3B

MAILING MACHINE INCLUDING OVERRIDEABLE SHEET LENGTH DISCRIMINATING STRUCTURE

The present invention is generally concerned with a mailing machine including sheet feeding and printing structures, and more particularly with a mailing machine including improved means for discriminating between sheets of acceptable and unacceptable length for processing purposes.

BACKGROUND OF THE INVENTION

As shown in U.S. patent application Ser. No. 07/841,912 for a Mailing Machine Including Short Sheet Length Detecting Means, filed Feb. 25, 1992 by Alton B. Eckert, Jr. et. al., now U.S. Pat. No. 5,380,109, and assigned to the assignee of the present invention, it is known in the art to provide a mailing machine with means for sensing a sheet in a path of travel, and with a microprocessor programmed for determining whether the overall length of the sheet corresponds to a minimum overall length by counting the time interval the sheet is disposed in blocking relationship with the sensing means and comparing that time interval to a predetermined time period for feeding a sheet of acceptable length. Although such structure is suitable for use in some mailing machines it is not suitable for use in all mailing machines, for example, in a mailing machine wherein the geometry of the machine is such that the distance between two sensors of the machine, which are utilized for measuring a sheet length, is less than the minimum acceptable sheet length, or sheets are fed through the machine at different speeds. Accordingly:

an object of the invention is to provide a mailing machine including sheet feeding and printing structure, and including means for discriminating between sheets of different lengths for processing purposes;

another object is to provide a mailing machine including overrideable means for discriminating between sheets having an acceptable or unacceptable minimum length for processing; and

another object is to provide a mailing machine including two speed sheet feeding means in combination with overrideable means for differently processing sheets of different lengths.

SUMMARY OF THE INVENTION

A mailing machine comprising, means for feeding a sheet in a path of travel, means for printing indicia on the sheet, means for controlling the sheet feeding and printing means, the controlling means including a microprocessor, the controlling means including means for sensing the sheet in the path of travel, the sensing means including a first sensor for sequentially sensing the leading and trailing edges of the sheet and providing corresponding sequential first signals to the microprocessor, the sensing means including a second sensor downstream from the first sensor for sensing the leading edge of the sheet and providing a corresponding second sensing signal to the microprocessor, and the microprocessor programmed for causing the sheet feeding means to feed the sheet, commencing a count of a first time interval when the trailing edge of the sheet is sensed by the first sensor, determining whether the first time interval count is less than a predetermined second time interval when the leading edge of the sheet is sensed by the second sensor, and terminating sheet feeding if the first time interval count is not less than the predetermined second time interval.

BRIEF DESCRIPTION OF THE DRAWINGS

As shown in the drawings wherein like reference numerals designate like or corresponding parts throughout the several views:

FIG. **1** is a schematic view of an improved mailing machine according to the invention;

FIG. **2** is a schematic view of the mailing machine of FIG. **1** showing the envelope feeding, flap guiding, flap deflecting, moistening, printing and sensing structures thereof for discriminating between different lengths of sheets for processing; and

FIG. **3** a flow chart of a process for discriminating between sheets of different lengths in the mailing machine of FIG. **1**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIGS. **1** and **2**, a mailing machine **10** according to the invention generally includes an improved mailing machine base **12**, having suitable framework **13** for supporting the various components thereof, and includes a conventional postage meter **14** which is suitably removably connected to the base **12**.

The mailing machine base **12** (FIGS. **1** and **2**) preferably includes a conventional source of supply **15** of d.c. power, having a d.c. output voltage level Vcc. The d.c. supply **15** is suitably adapted to be connected to an external source of supply of a.c. power via a two position, i.e., "on" and "off", power switch **15**A, for energization thereof, and thus of the base **12**. In addition, the base **12** comprises conventional sheet feeding structure **16**, including an elongate horizontally-extending deck **17**, an upright registration fence **17**A extending alongside of and longitudinally of the length of the deck **17**, and a plurality of rollers **17**B, which may be one or more belts, or the like, for feeding successive sheets **18** on the deck **17** through the machine **10**. Without departing from the spirit and scope of the invention, a given sheet **18**, having a leading edge **100** and a trailing edge **101**, may be a cut tape **18**A, a card, or folded or unfolded letter, or a sealed or unsealed envelope **18**B having a body **19**, and having a flap **19**A. And, the envelope body **19** may be stuffed with one or more cards, folded or unfolded letters, invoices, remittance slips or return envelopes, or other sheets **18**. In addition, the mailing machine base **12** includes envelope flap moistening structure **20**, including a suitable source of supply of water **20**A and a suitable envelope flap deflecting blade **21** for guiding envelope flaps **19**A into moistening relationship with the moistening structure **20**. Further, the mailing machine **12** includes a baffle **21**A, and includes a solenoid **21**B having a plunger **21**C which is connected to the baffle **21**A and loaded by a spring **21**D, such that the solenoid **21**B is operable against the force of the spring **21**D to pivotably move the baffle **21**A above the deck **17**, for guiding sheets **18** toward the flap deflecting blade **21** for moistening, and such that the solenoid **21**B is operable for permitting the spring to position the baffle **21**A beneath the deck **17**, for guiding sheets **18** away from the flap deflecting blade **21** for bypassing the moistening structure **20**. Moreover, the base **12** preferably includes conventional cut tape dispensing structure **22**, including a suitable receptacle for receiving and storing a stack of cut tapes **18**A and including conventional structure for feeding the cut tapes **18**A one at a time from the receptacle. And, the base **12** preferably includes conventional inking structure **24**, such as a suitable source of supply of ink, which may be a reservoir of ink or an ink

saturated roller and one or more rollers associated therewith for transferring ink therefrom to the printing structure, hereinafter discussed, of the postage meter **14**. Still further, the mailing machine base **12** preferably includes a plurality of conventional d.c. motors **26**A, **26**B and **26**C, one of which, **26**A, is suitably connected to the sheet feeding structure **16**, for operation thereof, another of which, **26**B, is suitably connected to a conventional drive train **28**, including a drive gear **28**A which is constructed and arranged for transferring motive power to the postage meter **14** for driving the printing structure hereinafter discussed, and another of which, **26**C, is suitably connected to the shutter bar 1ever arm **29** for moving a shutter bar as hereinafter discussed into and out of locking engagement with a postage meter drum drive gear driven by the gear **28**A.

For controlling the mailing machine base **12** (FIGS. **1** and **2**), the base **12** generally includes a conventional microprocessor **30**, and a plurality power amplifiers **32**A, **32**B, **32**C and **32**D which are each connected to a different one of the motors and solenoid **26**A, **26**B, **26**C and **21**B. And, for controlling the base **12**, the base **12** preferably includes the control circuit **80** hereinafter described for controlling each of the power amplifiers **32**A, **32**B, **32**C and **32**D, and thus the motors and solenoid **26**A, **26**B, **26**C and **21**B. Further, for controlling the base **12**, the base **12** includes a plurality of conventional sensors **34** which are suitably located relative to one or more components of the sheet feeding structure **16**, baffle **21**A, solenoid **21**B, cut tape dispensing structure **22**, inking structure **24**, motors **26**A, **26**B and **26**C, and drive train **28**, and relative to the path of travel **36** of respective sheets **18** fed through the machine **10**, for providing signals, such as the signal **38**, to the microprocessor **30** which are indicative of the position of the plunger of the solenoid **21**B, of the angular velocity of the respective motors **26**A, **26**B and **26**C, of the position of the baffle **21**A and selected components of the drive train and sheet feeding structures, **16** and **28**, of one or more positions of selected components of the structures **22**, **24** and **26**, of the available supply of water or ink, as the case may be, in the moistening and inking structures, **20** and **24**, and of one or more positions of a given sheet **18**, including a given cut tape **18**A or envelope **18**B, in the path of travel **36**. Still further, for controlling the mailing machine base **12**, the base **12** additionally comprises a conventional keyboard **40**, including a plurality of switches **42** and a suitable display **44** which are conventionally electrically connected to the microprocessor **30** for providing thereto conventional signals, such as the signal **46**, for causing the microprocessor **30** to control the base **12**, and receiving therefrom conventional signals, such as the signal **48**, for driving the display **44**. Moreover, the microprocessor **30** is conventionally programmed for, inter alia, responding to signals **38** received from the sensors **34**, and to signals **46** received from the keyboard **40** due to manual actuation of the switches **42**, for timely causing operation of the motors **26**A, **26**B and **26**C, and thus of the drive train and sheet feeding structures **16** and **28**, and timely causing operation of the solenoid **21**B, to cause envelopes **18**B to be transported by the sheet feeding structure **16**, guided into or out of flap deflecting relationship with the flap deflecting blade **21** by the envelope guiding baffle **21**A, and causing sheets **18** to be transported by the sheet feeding structure **16** through the machine **10**, and for timely causing the printing structure of the postage meter **14** to print postage indicia on the respective sheets **18** including tapes **18**A and envelopes **18**B. And, to that end, the microprocessor **30** is conventionally programmed to include a main line program **300** and a plurality of sub-programs, including, inter alia, a sheet feeding routine **400**, shutter bar routine **500**, postage meter printing routine **600**, envelope guiding baffle routine **700**, service routine **800**, shut-down routine **800**, and other conventional routines **950** for implementing the aforesaid functions and other functions hereinafter discussed.

The postage meter **14** (FIGS. **1** and **2**) preferably comprises conventional postage indicia printing structure **50**, which is preferably a conventional rotary printing drum **51**, having a suitable printing die **51**A for printing an indicia **51**E on a sheet **18**. In addition, the postage meter **14** includes a drum drive shaft **51**B on which there is mounted a drum drive gear **51**C which is dimensioned for meshing engagement with the drive train gear **28**A of the mailing machine base **12**. Accordingly, the postage meter **14** is constructed and arranged for interfacing with the drive train **28** of the mailing machine base **12** when the postage meter **14** is removably connected thereto. Further, the postage meter **14** includes a shutter bar **51**D, which is conventionally disposed in bearing engagement with the shutter bar lever arm **29**, when the meter **14** is connected to the base **12**, for movement by the lever am **29** into and out of locking engagement with the drum drive gear **51**C. For changing the postage value of the postage indicia **51**E printed by the die **51**A, the postage meter **14** additionally includes conventional value selection structure **52**, such as a plurality of conventional printing wheels and a drive train therefor, and also includes one or more motors **54**, such as stepper motors, which are respectively conventionally coupled to the drive trains of the value selection structure **52**.

For controlling the postage meter **14** (FIGS. **1** and **2**) the postage meter **14** includes a conventional microprocessor **56**, and includes one or more power amplifiers **58** which are respectively connected between the microprocessor **56** and a different motor **54**. Further, for controlling the postage meter **14**, the meter **14** includes a plurality of conventional sensors **60** which are suitably located relative to one or more components of the printing structure **50**, value selection structure **52**, motors **54** and the path of travel **36** of respective sheets **18** fed through the machine **10**, for providing signals, such as the signal **62**, to the microprocessor **56** which are indicative of one or more positions of selected components of the structures **50**, **52** and **54**, and of one or more positions of a given sheet **18**, in the path of travel **36**. Still further, for controlling the postage meter **14**, the meter **14** additionally comprises a conventional keyboard **64**, including a plurality of suitable switches **66** and a suitable display **68** which are conventionally electrically connected to the microprocessor **56** for providing thereto conventional signals, such as the signal **70**, for causing the microprocessor **56** to control the postage meter **14**, and for receiving therefrom conventional signals, such as the signal **72**, for driving the display **68**. Moreover, for controlling the postage meter **14**, the meter **14** includes conventional accounting structure **74**. The accounting structure **74** is suitably electrically connected to the microprocessor **56** for communicating therewith, and includes, inter alia, data stored therein which corresponds to the current total value of postage available for printing by the meter **14**, the current total value of postage printed by the meter **14** and the serial number of the meter **14**. And, for controlling the meter **14**, the microprocessor **56** is conventionally programmed, inter alia, for responding to value selection signals **70** received from the keyboard **64** due to manual actuation of the switches **66**, for causing the microprocessor **56** to energize the motors **54**, thereby causing the value selection structure **52** to position the print wheels to print an indicia **51**E having a postage value corresponding to the value selection signals **70**, for

causing the microprocessor **56** to access the accounting structure **74** to determine whether or not sufficient total postage is available for printing and, if so, to deduct therefrom an amount corresponding to the value selection signals **70** and to add the same amount to the total value printed, and, for causing the printing structure **50** to be unlocked to permit the printing of single postage indicia **51**E, including the amount corresponding to the value selection signals **70**, on a given sheet **18** under the control of the postage meter base **12**.

As shown in FIG. **2**, the postage meter base **14** preferably includes a multiple channel, pulse width modulated (PWM), load control circuit **80**, which is connected to the microprocessor **30**. The circuit **80** includes digital to analog converter structure **84** having clock "c" and data "d" input leads electrically connected to the microprocessor **30** for receiving conventional signals, such as the signals **86** and **88**, from the microprocessor **30** for controlling the converter structure **84**, and thus the control circuit **80**, for selectively providing different pulse width modulated signals to each of the power amplifiers **32**A, **32**B, **32**C and **32**D, for driving the respective motors **26**A, **26**B and **26**C, and the solenoid **21**B. A more detailed description of the control circuit **80** may be found in U.S. patent application Ser. No. 07/983,912 for a Mailing Machine Including Multiple Channel Pulse Width Modulated Signal Circuit, filed Dec. 1, 1992 by T. Pfeiffer, et. al., now U.S. Pat. No. 5,331,539, and assigned to the assignee of the present invention (Applicant's file C-968).

As shown in FIG. **2**, sheets **18**, including envelopes **18**B, fed through the machine **10** are fed downstream in the path of travel **36**, as indicated by the arrow. Preferably, one of the sensors **34**, i.e., sensor **92**, is located upstream from the sheet feeding rollers **17**B of the mailing machine base **10** for sensing respective sheets **18** as they are initially fed to the machine **10** and providing a signal **38** to the microprocessor **30**, such as the signal **94** via an analog to digital converter **95**, indicating that a sheet **18** has been fed to the machine **10**. In addition, one of the sensors **34**, i.e., sensor **96**, is located downstream from the sensor **92**, and from the input feed rollers **17**B, i.e., the feed rollers **17**B located upstream of the guide baffle **21**A, for sensing the leading edges **100** of successive sheets **18**, as they are initially fed downstream in the path of travel **36** by the input sheet feeding rollers **17**B, and providing a trip signal **34** to the microprocessor **30**, such as the signal **102** via an analog to digital converter **103**, indicating that a sheet **18** has been initially fed by the machine **10**. And, one of the sensors **34**, i.e., sensor **110**, is preferably a reflective sensor which senses light **112** generated thereby and reflected from a sheet **18**, in the path of travel **36**, for providing a signal **34** to the microprocessor **30**, such as the signal **114** via an analog to digital converter **115**, indicating that a sheet **18** is substantially ready for printing thereon.

In addition, for controlling operation of the base **12** (FIG. **2**) the keyboard switches **42** are preferably a plurality of manually depressible switching keys including a print only mode key **120**, which is manually actuatable for causing the base **12** to enter into a sheet feeding and printing mode of operation. In addition, the keyboard switches **42** include a seal-only mode key **122**, which is manually actuatable for causing the base **12** to enter a sheet feeding but no printing mode of operation wherein an envelope **18**B is fed into engagement with the flap deflecting blade **21**, moistened by the moistening structure **20** and sealed by the sheet feeding rollers **17**B in the course of being fed through the postage meter **14**. Moreover, the keyboard Switches **42** include a print and seal key **124**, which is manually actuatable for causing the base **12** to enter into a sheet feeding, flap deflecting, moistening and printing mode of operation. Further, for providing a visual indication to an operator concerning a trouble or error condition in the machine **10**, the keyboard **40** preferably includes a service lamp **125**, which is preferably intermittently energized in a light blinking mode of operation in response to appropriate signals **48** from the microprocessor **30** whenever the base **12** is in need of servicing, for example, due to the occurrence of a jam condition event in the course of operation thereof. For redundantly storing critical data, including a plurality of error codes, utilized for operation of the base **12** in various modes of operation thereof, the microprocessor **30** is preferably one of the type which not only includes a random access memory (RAM) **30**A, but also includes a suitable non-volatile memory (NVM) for storing such data, including error codes, without loss thereof due to power failure or during power-down conditions. Accordingly, the microprocessor **30** preferably includes an electrically erasable, programmable, read only, memory (EEPROM) **30**B for storing such data, including error codes, corresponding to malfunction conditions which occur at any time during energization of the machine **10**.

Moreover, for controlling operation of the base **12** (FIG. **2**), the base **12** preferably includes a manually actuatable test key **126** which is disposed within the base **12**, beneath a cover **128** suitably mounted to the framework **13**, for access upon removal of the cover **128**, to normally permit use solely by manufacturing and maintenance, i.e., service, personnel. Accordingly, the test key **126** is preferably connected to the framework **13** beneath the cover **128** for normally preventing access thereto by an operator of the machine **10**. The test key **126** is conventionally electrically connected to the microprocessor **30** and is manually actuatable to provide appropriate signals **46** to the microprocessor **30** for causing the base **12** to enter into a service mode of operation wherein stored data corresponding the error codes identifying respective malfunction conditions can be retrieved and displayed on the display **44**. Further, the base **12**, and in particular the keyboard **40**, preferably includes a clear key **129** which is manually actuatable, when the base **12** is in the service mode of operation thereof, for clearing from both the RAM **30**A and EEPROM **30**B the data corresponding to error codes stored therein. Moreover, for the purposes of this disclosure, unless otherwise stated, actuation of a given key, **120**, **122**, **124**, **126** or **129**, means that the relevant key has been moved, and holding the key moved for any length of time before release does not have any additional effect.

As shown in FIG. **3**, in accordance with the invention upon manual movement of the power switch **15**A to the "on" position, the base **12** and thus the microprocessor **30** is conventionally energized. Whereupon the microprocessor **30** commences execution of the main line program **300**. The main line program **300**, commences with the step **301** of causing the microprocessor **30** to initialize, which generally entails setting the voltage levels for the various sensors **34**, including the sensors **92**, **96** and **110**, motors **26**A, **26**B and **26**C, solenoid **21**B, clock and data leads **86** and **88**, and if they are not in their respective home positions, driving the motors **26**A, **26**B and **26**C thereto. In addition, the initialization step **301** preferably includes the function of operating the solenoid **21**B for positioning the baffle **21**A beneath the deck **17**, and thus in the non-flap moistening position thereof. Further, the initialization step preferably includes setting the sheet feeding speed for use by the sheet feeding routine **400** to a high sheet feeding speed, i.e., preferably

twenty-six inches per second (26"/sec.), as distinguished from a low speed, i.e., preferably seventeen and one-half inches per second (17 ½ "/sec.). Thereafter, the main line program **300** causes the microprocessor **30** to execute the step **302** of determining whether the override key, that is, a predetermined one of the keys **120**, **122** or **124**, is held actuated. In this connection it is noted that as hereinafter discussed the program **300** includes process steps for determining whether a given sheet **18** fed to the machine **10** is less than a predetermined minimum length of at least five inches (5"), and, if it is, shutting down the sheet feeding and printing operations of the machine **10**. And, that such process steps are desirable on a world-wide basis except, most notably, in Japan, where envelopes are not fed lengthwise through mailing machines, but rather are fed widthwise therethrough, as a result of which the aforesaid process steps, concluding with machine shut down upon detection of a sheet of less than the predetermined minimum length, are undesirable. Thus, the invention includes the provision of the override key for causing the microprocessor **30** to override implementation of the shut-down associated with minimum sheet-length processing. In addition, in order to abort the override process to accommodate, for example, installing in another country a mailing machine which was installed in Japan, the invention additionally includes the provision of an abort-override key which is actuatable for causing the microprocessor **30** to execute steps which re-enable implementation of minimum sheet-length processing. Accordingly, referring back to step **302**, and assuming that the override key **120**, **122** or **124** is held actuated, then, the program **300** causes the microprocessor **30** to execute the step **303** of setting the override flag "true" or "on" for use as hereinafter discussed. Assuming however, that the inquiry of step **302** is negatively answered, or that step **303** was executed when the machine **10** was previously energized, then, the main line program **300** causes the microprocessor **30** to execute the step **304** of determining whether an abort-override key, that is, a predetermined different one of the keys **120**, **122** or **124**, is held actuated. Assuming that the inquiry of step **304** is affirmative, then, the program **300** causes the microprocessor **30** to execute the step **305** of setting the override flag "flase" or "off" for use as hereinafter discussed. And, assuming that the inquiry of step **304** is negatively answered, or that step **305** was executed when the machine **10** was previously energized, then, the main line program **300** causes the microprocessor **30** to execute the step **306** of entering into an idle loop routine.

As thus constructed and arranged the operator has an opportunity to hold either the override or abort-override key, **120**, **122** or **124** (FIG. **2**), depressed, when the power switch **15**A is actuated, to cause the main line program **300** (FIG. **3**) to set an override flag either "true" or "flase" for use in disabling or re-enabling the minimum-length processing as hereafter discussed. Further, as thus constructed and arranged, assuming disablement of minimum sheet length processing, re-enablement cannot occur until the abort-override key, **120**, **122** or **124**, is held depressed, and, assuming re-enablement of minimum sheet-length processing, disablement cannot occur until the override key is held depressed. Moreover, as a practical matter, since the inquiries of steps **302** and **304** are implemented by the microprocessor **30** soon after actuation of the power switch **15**A, for energization of the machine **10**, both of the inquiries of steps **302** and **304** will be negatively answered unless the appropriate override or abort-override key **120**, **122** or **124**, is held actuated at the time of actuation of the power switch **15**A.

As shown in FIG. **3**, the idle loop **306**, commences with the step **308** of determining whether or not the test key **126** (FIG. **2**) has been actuated. Assuming that the test key **126** is actuated, step **308** (FIG. **3**), then, the program **300** causes the microprocessor **30** to execute the step **310** of calling up and causing implementation of the service mode routine **800**, in the course of which the error codes stored in the memories **30**A and **30**B may be displayed on the display **44**, followed by returning processing to idle, step **306**. Assuming however, that the test key **126** (FIG. **2**) is not actuated, step **308**, then, the program **300** executes the step **312** of determining whether or not a moistening key, i.e., one or the other of the seal only or print and seal keys, **122** or **124**, has been actuated. Assuming the inquiry of step **312** is affirmatively answered, then, the program **300** causes the microprocessor **30** to execute the step **314** of setting a moistening flag, resulting in the microprocessor **30** (FIG. **2**) calling up and implementing the baffle routine **700**, for causing the solenoid **21**B to be operated to raise the baffle **21**A to the position thereof wherein envelopes **18**B fed to the base **12** are guided by the baffle **21**A into engagement with the envelope flap deflecting blade **21** for downstream moistening by the moistening structure **20**. Thereafter the program **300** causes the microprocessor **30** to execute the step **316** of causing the microprocessor **30** to set the sheet feeding speed of the sheet feeding routine **400** to the "low" speed of preferably 17½" per second. Accordingly, if one or the other of the moistening keys, **122** or **124** (FIG. **2**), is actuated, the baffle **21**A is located in the envelope flap moistening position for guiding envelopes **18**B into engagement with flap deflecting blade **21**, and the sheet feeding speed is reduced. In this connection, it is noted that the "low" speed is a speed which is lower than the sheet feeding speed of 26"/second set in the course of microprocessor initialization, step **301** (FIG. **3**, and thus less than the speed at which the printing structure **50** (FIG. **2**) of the postage meter **14** prints indicia **51**E on an envelope **18**B.

Assuming however, that the inquiry of step **312** (FIG. **3**) is negatively answered, or that step **316** has been executed, then, the program **300** causes the microprocessor **30** to execute the step **318** of determining whether the no-moisten key, i.e., the print only key **120**, has been actuated. Thereafter, assuming the inquiry of step **318** is affirmatively answered, the program **300** causes the microprocessor **30** to execute the step **319** of determining whether the moistening flag is set, due to steps **314** and **316** having been implemented, and assuming it is the program **300** causes the microprocessor **30** to execute the step **320** of clearing the moistening flag, which results in causing the microprocessor **30** to implement the baffle routine **700** for causing the solenoid **21**B (FIG. **2**) to be deenergized to permit the spring **21**D to urge the baffle **21**A downwardly to the position thereof beneath the deck **17** wherein the baffle **21**A guides envelopes **18**B, or other sheets **18** fed to the machine **10**, out of engagement with the envelope flap deflecting blade **21** and thereover for bypassing the flap moistening function of the moistening structure **20**. Moreover, following execution of step **320** (FIG. **3**), the program **300** causes the microprocessor **30** to set the sheet feeding speed of the sheet feeding routine **400** to the high speed of preferably 26"/second, which corresponds to the linear speed of the periphery of the postage indicia printing drum **51** when printing indicia **51**E on a given sheet **18**. Thus, if the non-moistening, or print only key, **120** (FIG. **2**), actuated, the baffle **21**A is located in the non-flap moistening position, if it is not already so located, for guiding envelopes **18**B out of engagement with the flap deflecting blade **21**, and the sheet feeding speed is increased. Accordingly, assuming execution of steps **319** or **322**, or that the inquiry of step **318** is negatively answered,

then, the program **300** causes the microprocessor **30** to execute the step **324** of determining whether a machine error flag has been set.

As hereinafter discussed in greater detail, a machine error flag is set, step **324** (FIG. **3**), due to the occurrence of various events, including, for example, that the sheet feeding structure **16** (FIG. **1**) has been jammed in the course of feeding a sheet **18** through the machine **10**, that the shutter bar **51**D (FIG. **2**) has not been fully moved in the course of movement thereof either out of or into locking engagement with the drum drive gear **51**C, or that the meter drive train **28** has become jammed in the course of driving the same. Assuming a machine error flag has been set, step **324** (FIG. **3**), then, the program **300** returns processing to idle **306**, until the condition causing the error flag to be set is cured and the error flag is cleared, and a determination is thereafter made that an error flag is not set, step **324**. Thereafter the program **300** causes the microprocessor **30** to implement the step **326** of determining whether a sheet detection signal **94** (FIG. **2**) has been received from the sensor **92** due to a sheet **18** having been fed to the machine **10**. Assuming a sheet **18** has not been fed to the machine **10**, with the result that a sheet detection signal **96** has not been received, step **326** (FIG. **3**), then, the program **300** causes processing to loop to idle, step **306**, and to thereafter continuously loop through steps **308** through **326**, as appropriate, until the sheet detection signal **94** is received. Whereupon, the program **300** causes the microprocessor **30** to implement the step **328** of setting the sheet feeder routine flag "on", which results in the program **300** calling up and implementing the sheet feeding routine **400**. Thus the machine **10** responds to the detection of a sheet **18** fed to the machine **10** by commencing feeding the sheet **18** through the machine **10**.

As the sheet feeding routine **400** (FIG. **3**) is being implemented, the program **300** concurrently causes the microprocessor **30** to implement the step **330** of determining whether the sheet detection signal **94** has ended, that is, whether the trailing edge **101** (FIG. **2**) of a sheet **18** being fed downstream in the path of travel **36** by the input sheet feeding rollers **17B** has unblocked the sensor **92**. Assuming the sensor **92** is not unblocked, then, the program **300** (FIG. **3**) causes the microprocessor **30** to implement the step **332** of determining whether the sheet feeding trip signal flag has been set, indicating that the sensor **96** (FIG. **2**) has detected the leading edge **100** of the sheet **18** and provided a trip signal **102** to the microprocessor **30**. Assuming the microprocessor **30** determines that the sheet detection signal **94** has not ended, step **330** (FIG. **3**) and, in addition, that the sheet feeding trip signal flag has not been set, step **332**, then, the program **300** returns processing to step **330** and continuously successively implements steps **330** and **332** until the sheet feeding trip signal **102** is received, step **332**, before the sheet detection signal **94** is ended, step **330**, or the sheet detection signal **94** is ended, step **330**, before the sheet feeding trip signal **102** is received, step **332**.

Assuming the sheet feeding trip signal is received, step **332** (FIG. **3**) before the sheet detection signal is ended, step **330**, then, the program **300** causes the microprocessor **18** to execute the step **336** of starting two the of timers **30**D (FIG. **2**) to separately commence counting two predetermined time intervals, td and tj from the time instant that the leading edge **100** of the sheet **18** is sensed by the sheet detection sensor **96**. The time delay td is a predetermined time delay before the microprocessor **30** will commence driving the printing motor **26**B and thus the drum **51** through a printing cycle commencing with accelerating the postage printing drum **51** from rest and thus the drum **51**E on the sheet **18** sensed by trip sensor **96**. And the time delay which tj is a predetermined time delay, which is less than or equal to the time delay td, permitted to lapse before it may be concluded that a malfunction, or jam condition, has occurred at the flap deflecting blade **21**, due, for example, to a sealed envelope **18**B having been fed to the machine **10** when the baffle **21**A is positioned for guiding sheets **18** into engagement with the flap deflecting blade **21**. Accordingly, the counts of each of the time intervals, td and tj, are commenced if the program **300** determines that the sensors **92** and **96** (FIG. **2**) are concurrently blocked, indicating that the operator has fed a sheet **18** to the machine **10** which is longer than the physical distance "d", of substantially six inches (6"), between the sensors **92** and **96**, and that the operator has not withdrawn the sheet **18** before the input sheet feeding rollers **17**B have fed the sheet **18** into blocking relationship with the trip sensor **96**.

Assuming however that the sheet detection signal is ended, step **330** (FIG. **3**), before the trip signal is received, step **332**, then, the program **300** causes the microprocessor **30** to start a third timer **30**D (FIG. **2**) to commence counting a predetermined sheet-length time delay tsl. In this connection it is noted that if the length of the sheet **18** fed to the machine **10** is less than the physical distance "d" of substantially 6" between the sensors **92** and **96**, and either is or is not also less than a minimum desirable length of preferably substantially four and three-quarters inches (4¾") and, in addition, is not withdrawn by the operator after having been fed into sensing relationship with the sensor **92**, then, the inquiry of step **330** will be affirmatively answered before the inquiry of step **332** is affirmatively answered, with the result that the program **300** causes the microprocessor **30** to execute step **331**. In addition, it is noted that the program steps **331**A through **333**B are provided to discriminate between sheets **18** which are not of sufficient length to span the physical distance "d" of 6" between the sensors, **94** and **96**, but may or may not by less than the minimum desirable processing length, and to stop processing such sheets **18** which have a length of less than the desirable minimum length of substantially 4¾" unless the override key **120**, **122** or **124** has been actuated as hereinbefore discussed. In this connection it is noted that due to steps **331**A through **333**B, as appropriate, being executed when the sheet feeding speed is set at either the "low" speed of 17½"/second or the "high" speed of 26"/second, sheets **18** having an overall, longitudinal, length of 4½" or less will always be found to be less than the minimum desirable length of substantially 4¾" and those having a length of 5" or more will always be found to be greater. And, at "high" speed, sheets **18** of less than 5" in length will be found to be less than the minimum acceptable length of substantially 4¾", whereas at "low" speed, sheets **18** of less than 4½" in length will be found to be less than the minimum acceptable length of substantially 4¾". Accordingly, substantially 4¾" is intended to means 4½" to 5" in length.

With the above thoughts in mind, following execution of step **331** (FIG. **3**) the program **300** causes the microprocessor **30** to execute the step **331**A of determining whether the sheet length time interval tsi is equal to a maximum predetermined assuming the inquiry of step **331**A is negative, the program **300** causes the microprocessor **30** to execute the step of determining whether the sheet fed trip signal flag is set, i.e., the sheet **18** fed to the machine **10** has been detected by the trip sensor **96**, a signal **104** corresponding to such detection has been provided to the microprocessor **30** and flag corresponding thereto has been set thereby. Thereafter, program causes the microprocessor to continuously loop

through steps **331**A and **332**A, until the inquiry of step **331**A is affirmatively answered before the inquiry of step **332**A is affirmatively answered, or the inquiry of step **332**A is affirmatively answered before the inquiry of step **331**A is affirmatively answered. Assuming the inquiry of step **332**A is affirmatively answered before the inquiry of step **331**A is affirmatively answered, then, the program causes the microprocessor **30** to execute the step **333** of determining whether the override flag setting is "true" or "on", indicating that minimum sheet-length processing should be discontinued. Accordingly, assuming the inquiry of step **333** is affirmative, processing proceeds to step **336** which is, as hereinbefore discussed, the step to which processing proceeded when a determination was made in steps **330** and **332** that both sensors **92** and **96** were blocked by a sheet **18** having a length equal to or greater than the physical distance "d" of six inches between the sensors **92** and **96**. Or, otherwise stated an affirmative response to the inquiry of step **333** results in minimum sheet-length processing being ended and sheet processing to proceed as if the sheet length were acceptable.

On the other hand, assuming the inquiry of step **333** (FIG. **3**) is negatively answered, then, the program **300** causes the microprocessor **30** to execute the step **333**A of determining whether the sheet length time interval tsl is greater than or equal to a time period of substantially **40** milliseconds. Assuming a sheet feeding speed of 26" per second, if the inquiry of step **333**A is negatively answered, the given sheet **18** is equal to or more than the minimum desirable length of 5", since within less than forty milliseconds from the trailing edge **101** of a given sheet **18** unblocking the sheet detection sensor **92**, step **330**, the leading edge **100** of the sheet **18** has been detected by the trip sensor **96**. As a result, the program **300** causes the microprocessor **30** to proceed to execution of step **336**. If however the inquiry of step **333**A is affirmatively answered, indicating that the given sheet is less than the minimum acceptable length of 5" at the sheet feeding speed of 26"/second, since at least 40 milliseconds has passed since the sheet's trailing edge **101** unblocked the sheet's detection sensor **92** and the sheet leading edge **100** blocked the trip sensor **96**, then, the program **30** causes the microprocessor **30** to execute the step **333**B of setting a machine error flag, storing an error code corresponding to a short-sheet, or undesirable, sheet length, and blinking the service light **125** to visually display the malfunction condition. Referring back to step **331**A, and assuming that the maximum sheet length time interval is one second, and, the inquiry of step **331**A is affirmatively answered before the inquiry of step **332**A is affirmatively answered, then, the program **300** causes the microprocessor **30** to execute the step **334** of setting the sheet feeding trip signal flag "off" for shutting down processing of the sheet feeding routine **400**, followed by returning processing to step **326** to await the next sheet detection signal **94**. In this connection it is noted that if one second elapses from the time instant that the sheet detection sensor **92** is unblocked step **330** and the trip sensor **96** is still not blocked, step **332**A, then, it may be concluded that the operator has withdrawn the sheet **18** from the machine **10**.

Thereafter, the program **300** causes the microprocessor **30** to execute the step **340** of determining whether the base **12** is in a print mode of operation as a result of the operator having actuated either one or the other of the print only or print and seal keys, **120** or **124**. Assuming the inquiry of step **340** is negatively answered, then, the program **300** concludes that the base **12** is in the no-print, or seal only, mode of operation, as a result of the operator having actuated the seal only key **122** (FIG. **2**). Assuming that the seal only key **122** has been actuated, step **340** (FIG. **3**), due to the operator having chosen to use the base **12** (FIG. **2**) for sheet moistening and sealing purposes and not to use the postage meter **14** for printing purposes, then, the program **300** (FIG. **3**) bypasses all printing related steps, including the step **342** of causing the microprocessor **30** to move the shutter bar **51**D out of looking engagement with the drum drive gear **51**C, and causes the microprocessor **30** to implement the step **350** of determining whether the jam time delay tj has ended. Assuming that the jam time delay tj has not ended, then, the program **300** causes the microprocessor **30** to continuously loop through step **350** until the jam time delay tj has ended. Whereupon the program **300** causes the microprocessor **30** to execute the step **352** of determining whether the jam sensor **110** (FIG. **2**) is blocked. Assuming as is the normal case that the inquiry of step **352** is affirmative, indicating that the sheet **18** has been fed beyond the flap deflecting blade **21** and has not therefore been jammed against the blade **21**, then, the routine **300** causes the microprocessor **30** to execute the step **356** of again determining whether the machine **10** is in the seal only mode, since the processing commencing with step **350** follows either step **340** or step **348**. Assuming the inquiry of step **356** is affirmative, then, the program **300** causes the microprocessor **30** to bypass subsequent printing related steps, including the step **362** of causing the microprocessor **30** to call-up and execute the postage printing drum driving routine **600**, and instead, causes the microprocessor **30** to execute the step **388** of implementing a time delay of sufficient length to permit the sheet **18** to be fed from the machine **10**, followed by returning processing to idle **306**. Referring back to step **340** and assuming that the inquiry thereof is affirmatively answered, indicating that the machine **10** is in either one of the printing modes of operation due to the operator having has actuated either the print only key **120**, to cause the baffle **21**A to be positioned for guiding sheets **18** fed to the machine **10** out of engagement with the flap deflecting blade **21** for bypassing the moistening structure **20**, or the print and seal key **124**, to cause the baffle **21**A to be positioned for guiding sheets **18** into engagement with the flap deflecting blade **21** for flap moistening purposes, then, the program **300** (FIG. **3**) implements the step **342** of setting the shutter bar routine flag "on", which results in the program **300** causing the microprocessor **30** to call up and implement the shutter bar routine **500** for driving the shutter bar **51**D (FIG. **2**) out of locking engagement with the drum drive gear **51**.

As the microprocessor **30** (FIG. **2**) implements the shutter bar routine **500**, the program **300** (FIG. **3**) concurrently causes the microprocessor **30** to implement the step **344** of determining whether a shutter bar time-out flag has been set, indicating at this juncture that either the postage meter **14** (FIG. **2**) is improperly mounted on the base **12** or has for reasons beyond the scope of this invention prevented movement of the shutter bar **51**D out of locking engagement with the drum drive gear **51**, or the shutter bar **51**D has been stopped due to a malfunction condition in the base **12** which interferes with the lever arm **29** driving the shutter bar **51**D. Assuming that the shutter bar time-out flag is set, step **344** (FIG. **3**), then, the program **300** implements the step **346** of setting a machine error flag, storing an error code in the both the RAM **30**A and EEPROM **30**B and causing the keyboard service lamp **125** to commence blinking, followed by the step **384** of implementing a the shut-down routine **900** and then the step **386** of clearing the error flag and returning processing to idle **306**. If however, as the normal case, that the inquiry of step **344** is negatively answered, then, the

program **300** causes the microprocessor **30** to implement the step **348** of determining whether the machine **10** is in the print and seal mode of operation, due to the operator having actuated the print and seal key **124**, causing the baffle **21**A to be positioned for guiding envelope flaps **19**A into engagement with the flap deflecting blade **21**. Assuming that the machine **10** is not in the print and seal mode of operation, step **348**, then, the program **300** causes the microprocessor **30** to execute step **360**, hereinafter discussed, of determining whether the time td delay has ended. If however, the inquiry of step **348** is affirmatively answered, due to the operator having actuated the print and seal key **124**, then, the program **300** causes the microprocessor **30** to execute the step **350** of determining whether the jam time interval tj has ended. Assuming that the inquiry of step **350** is negative, the program **300** causes microprocessor processing to continuously loop through step **350** until the jam time interval tj is ended. Whereupon, the program **300** causes the microprocessor **30** to execute the step **352** of determining whether the jam sensor **110** (FIG. **2**) is blocked. Assuming the jam sensor **110** is not blocked, as it should be by the time the jam time delay tj has ended, then, the inquiry of step **352** will be negatively answered, indicating that a jam condition has occurred between the time the sheet **18** was sensed by the trip sensor **96** and the jam time interval tj has ended. Thus the program **300** recognizes when a sheet **18** (FIG. **2**) is jammed against the flap deflecting blade **21**. As a result of the negative response to the inquiry of step **352** (FIG. **3**), the program **300** causes the microprocessor **30** to execute the step **354** of setting the sheet feeder routine flag off, to shut down the sheet feeding routine **400**, and to execute the shutter bar routine **500** for causing the shutter bar **51**D (FIG. **2**) to be returned into locking engagement with the postage printing drum drive gear **51**C, thereby preventing rotation of the printing drum **51**. In addition, the microprocessor **30** is caused to set a machine error flag, store an error code as hereinbefore discussed, and blink the service light **125**, followed by the successive steps **384** and **386** of causing the microprocessor **30** to implement the shut down routine **900**, clearing the error flag and returning processing to idle **306**. Assuming however, as is the normal case, that the inquiry of step **352** is affirmatively answered, indicating that the sheet **18** has been fed into blocking relationship with the jam sensor **110** (FIG. **2**) and is not therefore jammed at the flap deflecting blade **21**, then, the program **300** causes the microprocessor **30** to execute the step **356** of determining whether the machine **10** is in the seal only mode of operation thereof, as a result of the operator having actuated the seal only key **122** (FIG. **2**) to cause the baffle **21**A to be located for guiding sheets **18** out of engagement with the flap deflecting blade **21** and to cause printing to be bypassed as hereinbefore discussed. Accordingly, if the inquiry of step **356** is affirmatively answered, then, the program **300** causes the microprocessor **30** to bypass all printing related steps, including the step **352** of setting the printing routine flag "on" for causing printing to be implemented, and instead to execute the step **388** of implementing the time delay permitting the sheet **18** to exit the machine **10**, followed by returning processing to idle **306**. If however, the inquiry of step **356** is negatively answered, indicating that printing should occur, then, the program **300** causes the microprocessor **30** to execute the step **358** of setting the sheet feeding speed of the sheet feeding routine **400** to the high speed of 26"/second, as hereinbefore discussed, followed by executing the step **360** of determining whether the time delay td has ended. Assuming the time delay td is not ended, then, the program **300** causes the microprocessor **30** to continuously loop through step **360** until the time delay td is ended. Whereupon the program **300** causes the microprocessor **30** to execute the step **362** of setting the postage meter acceleration, constant velocity and deceleration routine flags successively "on", which results in the program **300** calling up and implementing the postage meter acceleration, constant velocity and deceleration, or postage printing, routine **600**.

As the postage printing routine **600** is being implemented, the program **300** (FIG. **3**) concurrently implements the successive steps, **364** through **368**, of successively clearing and setting a time interval counter for counting a series of predetermined fault time intervals during which the microprocessor **30** preferably receives transition signals **38** from the sensing structure **34** indicating that the postage printing drum **51** has commenced being driven from its home position, has timely achieved constant velocity, has been timely driven at the constant velocity during the printing cycle and has been timely decelerated back to rest at its home position, without having been jammed in the course of such movement, failing which, the program **300** causes the microprocessor **30** to execute the successive steps **370**, **384** and **386** of setting a machine error flag, storing an error code and blinking the service light **125**, followed by implementing the shutdown routine **900**, clearing the error flag and returning processing to idle, step **306**. Accordingly, if the postage printing drum **51** is not timely driven from and the back to its home position after commencement of implementation of the postage meter printing routine **600**, step **362**, the program **300** shuts down all sheet processing and provides a visual indication to the operator that the mailing machine base **12**, or postage meter **14**, or both, are in need of servicing. At this juncture, the operator of the machine **10** may find, for example, that the drum **51** did not move from its home position, due to the postage meter **14** having insufficient funds to print the postage value entered therein by the operator for printing purposes, or some other error condition has occurred in the meter **14** which preludes driving the drum **51** from its home position. Alternatively, the operator may find that a jam condition exists in the base **12** which prevents the drum drive gear **51**C from driving the drum **51**. Whatever may be the reason for the drum **51** not being timely moved from and then back to its home position during the various fault time intervals, the operator would normally attempt to cure the defect in machine operation, failing which a service person would be called in to cure the defect.

However, assuming as is the normal case, that a determination is made in step **366** that all of the transition signals are timely received, i.e., before the fault time intervals are ended, step **364**, then, the program **300** causes the microprocessor **30** to implement the step **372** of determining whether the postage meter cycle ended flag has been set, due to the postage meter printing routine **600** having driven the drum **51** through a single printing cycle. Assuming that the postage meter cycle ended flag has not been set, step **372**, then, the program **300** continuously causes the microprocessor **30** to implement step **372** until the postage meter cycle ended flag has been set. Whereupon, the program **300** causes the microprocessor **30** to implement the step **374** of setting a postage meter trip cycle complete flag. As thus constructed and arranged, in the course driving the postage printing drum **51** through a printing cycle, including acceleration of the postage meter drum **51** from its home position to a constant velocity for printing purposes and then decelerating the drum **51** back to rest at its home position, the microprocessor **30** repeatedly determines whether the dif-

ference between desired and actual movements of the drum **51** are acceptable, failing which, an error code is stored in each memory, **30**A and **30**B, and a shut-down routine **900** is implemented.

Assuming the postage meter printing cycle has ended, step **372** and **374** (FIG. **3**), then, the program **300** causes the microprocessor **30** to execute the step **376** of determining whether the machine **10** is in a moistening mode of operation, due to the operator having depressed either one of the seal only or print and seal keys, **122** or **124**, and the baffle **21**A being positioned for guiding sheets **18** into engagement with the envelope flap deflecting blade **21** for subsequent moistening by the moistening structure **20**. In connection with step **376** it is noted that for printing purposes, although the machine **10** may be in the print and seal mode of operation, step **348** (FIG. **3**), the sheet feeding speed has been set to high speed of 26"/second, step **358**, for printing purposes, step **362**. Accordingly, the inquiry of step **376** is made to determine whether the sheet feeding speed should be returned to low speed for processing the next sheet **18**. If the next sheet **18** is not one which is to be moistened, then the program **300** causes the microprocessor **30** to execute the step **378** of setting the shutter bar routine flag on, which results in the microprocessor **30** calling up and implementing the shutter bar routine **500** for driving the shutter bar **51**D (FIG. **2**) back into locking relationship with the drum drive gear **51**C to prevent printing. Assuming however that the inquiry of step **376** is affirmative, then, before implementation of step **378**, the program **300** causes the microprocessor **30** to execute the step **380** of setting the sheet feeding speed of the sheet feeding routine **400** to the low speed of 17.5"/second for envelope moistening purposes. After implementation of step **378**, the program **300** causes the microprocessor **30** to execute the step **380** of determining whether the shutter bar time out flag is set, that is, determining whether the shutter bar **51**D has been timely returned to locking relationship with the postage printing drum drive gear **51**C to prevent printing. Assuming the postage printing drum **51** has not been timely locked against rotation then, the program **300** causes the microprocessor **30** to execute the step **382** of setting a machine error flag, storing an error code and blinking the service light **125**, followed by execution of the steps, **384** and **386**, of implementing the shutdown routine **900**, clearing the error flag and returning processing to idle **306**. If however, the shutter bar time out flag is not set, step **380**, indicating that the drum **51**C has been timely locked against movement, then, the program **300** causes the microprocessor **30** to execute the step **388** of delaying processing for a time interval sufficient to permit the processed sheet **18** to exit the machine **10**, followed by returning processing to idle **306**.

As thus constructed and arranged the microprocessor **30**, and thus the machine **10**, includes structure for feeding sheets **18** at speed which is lower then the printing speed for moistening purposes, and, after moistening, feeding such sheets **18** at a higher speed for printing purposes. Moreover, the machine **10** is constructed and arranged for detecting a jam condition at the flap deflecting blade **21**, occasioned for example by an operator feeding a sealed envelope **18**B to the machine **10** when the machine **10** is in a moistening mode of operation, whereby the baffle **21**A is positioned for guiding sheets **18** into rather than out of engagement with the flap deflecting blade **21**. Moreover, the machine **10** is constructed and arranged to operate at a low speed for moistening purposes to ensure that sheet feeding may be timely stopped on the occasion of a sheet **18** being jammed against the flap deflecting blade **21**, in order to avoid tearing the sheet **18** if it does become jammed, or, if not torn, but slowed down to avoid wasting postage by not printing the indicia **51**E fully and legibly on the sheet **18**.

What is claimed is:

1. A mailing machine comprising:

a) means for feeding a sheet in a path of travel;

b) means for printing indicia on the sheet;

c) means for controlling the sheet feeding and printing means, the controlling means including a microprocessor, the controlling means including means for sensing the sheet in the path of travel, the sensing means including a first sensor for sequentially sensing the leading and trailing edges of the sheet and providing corresponding sequential first signals to the microprocessor, the sensing means including a second sensor downstream from the first sensor for sensing the leading edge of the sheet and providing a corresponding second sensing signal to the microprocessor; and

d) the microprocessor programmed for

1) causing the sheet feeding means to feed the sheet,

2) commencing a count of a first time interval when the trailing edge of the sheet is sensed by the first sensor and ending when the leading edge of the sheet is sensed by the second sensor,

3) determining whether the first time interval count is less than a predetermined second time interval, and

4) terminating sheet feeding if the first time interval count is not less than the predetermined second time interval.

2. The mailing machine according to claim **1** including the microprocessor programmed for causing the printing means to commence a printing cycle at the end of a predetermined time delay from the microprocessor receiving the second leading edge sensing signal if the first time interval count is less than the predetermined second time interval.

3. The mailing machine according to claim **1** including means for energizing the microprocessor, a first manually actuatable switch connected to the microprocessor, and the microprocessor programmed for overriding termination of sheet feeding if the first switch is held actuated when the microprocessor is energized.

4. The mailing machine according to claim **3** including a second manually actuatable switch connected to the microprocessor, and the microprocessor programmed for aborting the overriding program if the second switch is held actuated when the microprocessor is energized and the first switch was previously actuated.

5. The mailing machine according to claim **1** including the microprocessor programmed for causing the printing means to commence a printing cycle at the end of a predetermined time delay from the receiving the second sensing signal if the second sensing signal is received by the microprocessor before the first leading edge sensing signal is ended.

6. The mailing machine according to claim **1** including the microprocessor programmed for causing the sheet feeding means to stop feeding the sheet if the first time interval count is a selected count before the second sensing signal is received by the microprocessor.

7. The mailing machine according to claim **1** including the microprocessor programmed for causing the printing means to commence a printing cycle at the end of a predetermined time delay from the microprocessor determining that the first time interval is less than the predetermined second time interval.

8. The mailing machine according to claim **3** including the microprocessor programmed for causing the printing means to commence a printing cycle at the end of a predetermined time delay from the microprocessor determining that the first switch is actuated.

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